AUTOMATION OF CONSTRUCTION AND DECORATION PROJECTS

This application claims priority and benefit of Provisional Application
Serial Number 60/259,491 filed January 3, 2001 which is incorporated by reference
5   herein.

BACKGROUND OF THE INVENTION

1.   Technical Field

This invention relates to automation of construction and decoration
10   projects and, more particularly, to improvement therefor.

2.   Background Art

The advent of worldwide web or internet has revolutionized and
automated many aspects of our lives. For example, orders for stocks can be placed
over the internet, clothing and wares can be purchased without leaving home, and
15   wealth of information and news can be instantaneously downloaded to one's
computer. However, some aspects of everyday life have remained painfully time-
consuming and logistically frustrating. For example, selection of wallpaper, paint,
flooring and/or appliances for either a new construction or a redecoration project is

a long and highly labor-intensive process. To date, there are a number of unresolved problems and drawbacks to the process.

During a construction or a structural remodeling phase, coordinating between the architect, homeowner, contractor, subcontractors, painters, and interior decorators is a hassle, at best. It takes weeks and months to determine cost and schedule of a project. The problem becomes exacerbated if and when the customer wants to make a change. Informing everyone involved that a change has taken place can be a daunting task. However, getting feedback from contractor and subcontractors regarding cost and scheduling changes as a result of the change in the plans can seem an absolutely impossible undertaking. Furthermore, even cost estimates received from contractors may not include material price changes for items, such as flooring, paint, wallpaper and so forth. Currently, the effort requires multiple phone calls and faxes among all the involved parties.

Selection of finishing materials, and more importantly, coordination thereof can take what seems an eternity and often does not yield the desired results. For example, selecting paint colors still requires a trip to a store and a small, if any, sample of color. That does not always reflect how the room will look when a much larger surface area, such as a wall, will be painted. Furthermore, once a selection of paint is made, the small sample will have to be taken to a flooring supply store, tile store, appliance store, to ensure that all colors are matched and properly coordinated. Coordinating color of a new or existing appliance is especially difficult since color swatches for appliances do not exist and the appliance itself is not generally portable.

One of the worst experiences one will probably encounter is selecting wallpaper. Typically, a store will have dozens of books with samples (pages) of

different wallpaper secured therein. Customers will have to go through each book to determine what type and general style of paper they like. Once the customer narrows down to a certain number of books, she/he will have to go through each book to select several choices of wallpaper. One problem that arises is that many stores loan

5 these books to customers. Thus, the store could be missing quite a number of books at any one time, precluding other customers from seeing all the books. Another problem is that some customers cut out samples of paper they want, eliminating these samples from being further selected by others. However, even if the book is available, it is difficult to predict and visualize how the paper will look on the wall

10 with particular lighting. The sample books themselves are quite heavy and difficult to transport. They are clumsy and impossible to view in place at more than arms length.

From the standpoint of a store owner, the store must first purchase these dozens of wallpaper books, each of which can be very costly, maintain these

15 books in somewhat of an order within the store, and provide valuable and often expensive floor space for storing these books. Additionally, the store must frequently replace the books if pages have been damaged or entirely ripped out. Furthermore, the store owner must track which books have been loaned and, at least, attempt to secure timely return of the loaned books.

20 From the standpoint of a wallpaper manufacturer, the sample books represent a significant investment. Patterns that prove to be unpopular, still must be inventoried and have the same cost structure as the most popular styles. Many of the most popular designs do not receive sufficient exposure since it is likely that the most popular selections are ripped out with the most frequency or are more often taken

25 home by a customer. Also, the manufacturer does not obtain accurate feedback

regarding what models are most popular since it is not known how long ago these models of the wallpaper have been missing from the book.

Another drawback to the existing process is that even if the owner chooses to undertake repainting, expansion or any other construction or

5 redecoration project that requires matching of the existing colors to new colors in a number of years after the initial project, no one usually remembers or has samples of the existing colors. Therefore, matching the older versions of selections becomes nearly impossible.

Therefore, it would be desirable to improve and simplify the process of

10 coordinating a construction project and/or a redecoration project.

SUMMARY

According to one embodiment of the present invention, a system for managing a development project for a customer includes at least one database having data, means for allowing the customer to select at least one selected product

15 from at least one of the databases, and means for viewing said at least one selected product. The system allows customer to manage a project through a website and determine how various changes to the project will affect cost, time and other variables.

20 According to another embodiment of the present invention, a system for collaborating on a development project for a customer includes means for generating a personal file for the customer, means for providing repeated access to the customer, means for allowing the customer to allow access to other users, at least one database having data, and at least one interactive module allowing the customer

25 to interact with at least one of the databases to make product selections and to allow

the customer access to schedule of the other users. The system allows customer to collaborate on a development project with installers, architects and other workers.

According to a further embodiment of the present invention, a system for generating large scale graphics includes at least one database having data regarding various products, means for selecting at least one product from at least one of the databases, and a printing unit for printing the product as a large scale graphic on self adhesive sheet material for subsequent application. The system allows printing of proofs as well as replacement pieces of wallpaper and other wallcoverings that do not require large quantities, such as borders and trim.

According to a further embodiment of the present invention, a kiosk system for selecting a product in a store includes means for generating a personal file for a customer, at least one database having data regarding to various products, means for allowing to select at least one selected product from at least one of the databases, and means for viewing at least one selected product. The system allows customer to view various products within the store, make selections through the kiosk and, potentially, match product to a particular requirement.

According to a further embodiment of the present invention, a system for matching at least one product includes at least one database having data regarding various products, means for allowing the customer to match and select at least one matched product from at least one of the databases to match a particular color, and means for printing at least one matched graphic. The system allows customer to match a product to particular requirements.

The foregoing and other advantages of the present invention become more apparent in light of the following detailed description of the exemplary embodiments thereof, as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of a system for managing a development project for a customer, according to the present invention;

FIG. 2 is a schematic view of a sheet material generated through use of the system of **FIG. 1** to be placed onto a wall;

FIG. 3 is a schematic view of a decorator's module utilizing the system of **FIG. 1**; and

FIG. 4 is a flow chart diagram of a method for coordinating and managing a development project for a customer using the system of **FIG. 1.**

DETAILED DESCRIPTION OF THE INVENTION

A system **10** for managing a development project includes a dedicated website **12** accessible via world wide web or internet. The website **12** includes a plurality of personal files **14,** one for each customer for a project. Each personal file **14** is set up for the purpose of including project data and/or information. The customer has a customer identification password or number. The system **10** also includes at least one database **16**. The databases include data and lists, including samples, of wallpaper, paint colors, appliance style and colors, floor coverings, draperies, blinds and accessories as well as construction variables such as: windows, doors, trim, lumber variety, lighting fixtures and many other elements. The databases **16** may also include cost and delivery information regarding each item.

The system **10** also includes one or more application modules **20** for performing various functions, applications and/or operations. One such application has capabilities for providing immediate cost estimates once selection is made and

dimensions are either input or obtained from the existing file. A further application includes scheduling estimates for the project and in the event of a construction design change once work has commenced. Another application includes a heuristic suggestion algorithm that is continually refined based on the responses of the users.

5   A further application is a coordination algorithm that keeps track of selections that were already made. Additional applications can be also implemented to aid the process of managing and coordinating a project.

The system 10 may further include at least one interactive module 22 that allows the master customer to fill out a profile, on-line, regarding demographic

10   information, financial constraints, and other personnel preferences, such as overall style preference, color preference and others. Based on the input information, the interactive module provides a list of suitable choices, selections or suggestions. The interactive module 22 may also include scheduling information regarding each of the contractors, such as access to the contractors' individual calendars.

15   The system 10 may also include at least one archive module 24 that stores previous data regarding the customer, project or other information. Thus, if the master customer had previously purchased paint, wallpaper, appliances or has made any other choices, these previous selections are factored into a suggestion list that is subsequently presented to the customer. The customer could then narrow

20   down the selection to several choices.

The system 10 also includes a printer unit 26 that has a printer with sheet or roll material 30. The material 30 includes a top printable layer or substrate 32, and possibly, a removable backing sheet 34 with an adhesive layer 36 sandwiched therebetween, as shown in FIG. 2. Alternatively, a light tack adhesive

25   can be used, either pre-applied to the substrate or applied to the back of the material

at the time of printing. The printing unit **26** has the capability of carefully matching

color to the actual wallpaper manufacturer's design. The printing unit also has

capability of simulating texture or at least printing on a variety of textured materials.

Once the customer has made at least one selection, he/she would print out the

5   selected sample on the printer unit **26**. The sample can be printed in a large form on

the sheet or roll material. Once the printer completes printing one or more samples,

the customer can bring those samples home and, if desired, adhere the sample

wallpaper or large scale paint color swatch onto a wall **40**.

The customer does not need to save the samples for future reference,

10   since this system has the capability of archiving the selection for future reference.

The system may also include a plurality of help modules **42** and

complimentary product modules **44**. Once a customer has made a selection of a

certain product, such as wallpaper, the help module **42** will post a checklist of

required tools and accessories needed for the customer to complete the project on his

15   own. The complimentary product module **44** will provide a list of contractors

and/or wallpaper professionals for the demographic area of the customer and other

complimentary lists. Since the system **10** understands the exact dimensions of the

specific job, cost estimating for the installation labor can be performed remotely at

this time. The job can even be scheduled remotely as the system ties in with the

20   calendars of all the listed installers.

The customer also has an option of providing various forms of access to

other users. For example, there may be authorized and/or privileged users, each

type having varying degrees of access. Privileged users have the ability to access the

data and introduce changes thereto. Authorized users will be able to obtain

25   information and data without the ability to make changes.

According to a feature of the present invention, a decorator's module 50 is available for interior decorators and design consultants. The decorator's module 50 includes a laptop computer 52 and a digital camera 54, as shown in **FIG. 3**. Each room of a customer's house can be photographed with the digital camera 54.

5   The digitized image can be viewed on the laptop 52. Once the decorator suggests or a customer makes selection of paint, wallpaper, trim color, wall coverings, curtains and other accessories, these selections can be displayed in the digitized room. The selections can be colored over the customer's room and coordinated therein. The decorator's module 50 would be connected to the dedicated website via the internet

10   connection or incorporate the system 10 either entirely or partially. The customer will have an opportunity to view on the computer the selection that he or she has made and how it would look in the room. The resulting sample room view can also be printed for future reference.

According to another embodiment of the present invention, the access

15   to the site could be available through a store kiosk 60, as best seen in **FIG. 1**. The kiosk, or a stand-alone computer, that communicates with the website can be placed in a store for the customers to have access to their data while they are actually shopping. An independent kiosk can be used in a store setting. The independent kiosk would contain and include interior decorating products and tips in the

20   database of each manufacturer. The kiosk could also incorporate the system described herein either partially or entirely. The kiosks could be also used to display various advertisements or information during idle time tied in with the specific products of interest or general advertising for local or national advertising campaigns.

In operation, a customer accesses world wide web site **12**, as shown in **FIGS. 1 and 4**, and indicated by numeral **70** in **FIG. 4**. Subsequent to customer accessing the site **12**, the system **10** would check through its archived files and modules **24** whether the customer is a repeat customer, as indicated by numeral **72**

5   in **FIG. 4**. If the customer is a repeat customer, then the system **10** would retrieve archived data regarding the customer, as indicated by **74**. Subsequently, the system would prompt the customer to verify that the archived information is still valid, as indicated by **76**. If the customer indicates that the archived information is no longer valid, the system will prompt the customer to update the necessary information, as

10   indicated by **78**. Such information can be used for subsequent target marketing.

If the customer is a new customer, a new customer file **14** is created on the website, as indicated by **80**. The file is accessible from anywhere through a connection to the world wide web. A customer password is generated for the customer, as shown by **82**. The customer password allows the customer to

15   repeatedly access his/her personal file. The customer password also allows the customer to grant access to other types of users, such as privileged and/or authorized users, as indicated by **84**. The privileged users have the ability to repeatedly access the file and also modify the data. For example, a privileged user may be an architect whose input would include a set of architectural drawings. The architect, as a

20   privileged user, will have the capability to change the drawings and/or introduce other information to the personal file.

Either customer or privileged user will input information and data regarding exact dimensions and parameters of any project, including construction of a house or other structure, as indicated by **86**. The exact dimensions of every room

25   can be input for subsequent calculation of material and labor required to finish that

room or any other particular space. The dimensions will enable the software to provide material and labor cost information in broken down format, such as costs of lumber, paint or wallpaper and cost of labor therefor.

An authorized user, such as a contractor, who will be responsible for

5   building the project to the architectural plans, will have limited access. The authorized user may be able to post notes and progress reports as well as estimates for the customer to access. The authorized user would also be able to obtain the necessary information from the website, without capability of changing or modifying the data in the file. Other authorized users, such as flooring, painting and decorating

10   professionals, may be given limited access to the personal file to obtain information and data therefrom.

In the event that a customer or architect introduces a change to the initial plans, the system **10** would provide them with feedback regarding changes in the schedule, and labor and material costs as a result of the change to the original

15   plans. The system would access the databases **16** to obtain cost of the material, use one of the application modules **20** to do calculations, and gather information from the personal file **14** regarding the size of the room to recalculate the cost of the change. Databases **16** are maintained current providing a direct link back to product manufacturers. The customer would have ability of substituting various minor

20   materials such as wallpaper or paint into the program or major alterations such as wall locations, addition of windows, altering cabinet locations with the system providing cost and schedule estimates for various choices the customer would make.

Thus, once the customer has input all the information and/or updated the existing information, the customer will have an opportunity to interact with the

25   web site **12** and manipulate data in numerous ways, as indicated by **88**. One goal of

the present invention is to provide an improved method for a customer to select

products such as wallpaper, paint colors, draperies and accessories, blinds,

appliances and other items necessary to complete a decoration or construction

project, as indicated by **90**. Therefore, customer could access one of the systems

5   databases **16** that includes samples of the necessary product. For example, if

customer needs to select wallpaper, the system **10**, using its heuristic algorithm and

the interactive module **22**, would prompt the customer to answer a number of

questions, therefore, limiting and focusing selection of wallpapers that the system **10**

would present to the customer. Once a certain selection is presented to the

10   customer, the customer could select several choices from the given sample list.

Once the choices are made, the customer could print one or more

samples on the printer, as indicated by **92**. The printer has capabilities of matching

color and texture of the chosen wallpaper or other products. The sample is printed

on a generous piece of material that can be brought home. The high quality printer

15   can be located in a store or a central location. The customer can print a sample in a

store and bring the sample home. Alternatively, the customer can request the

sample to be printed for him/her either at the store or central location (such as a

website administrator) and then mailed to the customer. Once at home, the paint or

wallpaper sample can be applied to the wall, or printed carpet, tile, vinyl, laminate,

20   or simulated wood sample could be applied to the floor for evaluation in a home

setting, as shown in **FIG. 2**. The generous self-adhesive sample would allow the

customer to make a better decision regarding his/her selection under real conditions.

If a customer does have a printer, the samples can be printed by the customer at

home.

Additionally, based on what particular product the customer is interested in, the help module **42** could provide the customer with a list of decorating tips or helpful suggestions, as indicated by **94**. Also, the complimentary products module **44**, based on customer selection, could provide the customer with

5 complimentary products and a checklist of required tools and accessories or names of contractors that are skilled to install the chosen products, as indicated by **96**.

Furthermore, as discussed above, the customer can obtain cost estimates and change in schedules, as indicated by **98, 100**.

The kiosk option could be placed in any wallpaper or paint or other

10 types of store and be connected to the website **12**. If the kiosk **60** is connected to the website **12**, the customer could access his/her personal data through the kiosk **60** and the website **12**. For example, if the customer is in a store and does not remember exact dimensions, the customer could access the website **12** to obtain the dimensions and other necessary information through the kiosk. However, the kiosk

15 **60** could be a stand-alone unit that includes databases with certain products and incorporates most or all features located on the website **12**. The kiosk **60** located in various stores could also include advertisements during idle time. For example, if the kiosk is not being used by the customer, the retailer may choose to run certain advertisements thereon.

20 The system of the present invention has many benefits to customers, contractors, and product manufacturers. The main benefit of the system to the customer is that it improves and streamlines selection process of products for a construction or redecoration project. The system eliminates the need of going back and forth between various stores and home and allows for easy color/style matching.

25 The system also eliminates the need for bringing bulky wallpaper books home. The

customers could also place orders from home without the need of making multiple trips to the store. Additionally, the customer has reasonable sized samples that can be either retained or thrown away. Some graphics, such as wall borders can be printed and retained. Additionally, if a portion of wallpaper has been damaged,

5   customer may print the needed amount of wallpaper to replace the damaged portion. The sample size and ability of the sample to be secured to the wall allows customers to get a better idea of how the final product would look in his/her environment. Furthermore, the selection profile would remain with the website for future purchases. The system could also serve as a fine art proofer for samples and actual

10   fine art reproductions or gicl'ees.

The benefits to the retailer are also great. First, it eliminates the need for keeping wallpaper books in the store and multiple samples of other products. Elimination of maintaining wallpaper books in the store and multiple samples of other products allows the retailer to free up valuable floor space in the store.

15   Furthermore, elimination of wallpaper books and multiple samples saves significant amount of money for the manufacturer, distributor, and retailer. The system **10** also eliminates the need to keep the wallpaper book library current, the need to track books that have been loaned, and the need to replace the books that have not been returned. Furthermore, the system of the present invention offers the retailer a

20   unique opportunity for marketing. The shop name can be printed on each of the proof samples, therefore, keeping the shop name and phone number in front of the customer. Second, the shop can supply through its help and complimentary modules **42, 44** offers and suggestions regarding its other products and/or affiliated installers. The retailer also has access to database of customer profiles, thereby

25   enabling the retailer to cater to specific customer needs. This affords the retailer

with a target marketing opportunity only available up to now over the Internet. The Internet excels in target marketing where an offer is made to a specific customer based on his browsing trail interest. Now, for the first time, a retailer has the same target marketing opportunity. Promotions at retail can now be designed and tailored

5   to a single person - *"That wallpaper is nice, but this similar design by another manufacturer is better quality at a lower price... The paint that matches that wallpaper is on sale if you order it at the same time...If you carpet only one additional room, installation will be free, today only...The matching wallpaper border is 50% off with the order...Customers like you have decorated like this"* to

10   name just a few.

The benefits to manufacturers of products are also many. For example, for manufacturers of wallpaper products, the need to produce and maintain many of the sample books is eliminated. With sample selection being accessed through the web, the manufacturers do not have to concern themselves with certain wallpaper

15   samples being missing from the book and, therefore, not getting the proper exposure. The wallpaper manufacturers can also obtain real time, critical point of purchase data on which products are most successful never before available to them.

While the present invention has been illustrated and described with respect to a particular embodiment thereof, it should be appreciated by those of

20   ordinary skill in the art, that various modifications to this invention may be made without departing from the spirit and scope of the present invention. For example, although for clarity references are made to archive modules, help modules, complimentary modules, interactive modules, and application modules, these functions do not need to be segregated and can be operating jointly. It is within the

25   scope of the present invention that equivalent functionality can be implemented

using a variety of software and firmware techniques that are known to one of ordinary skill in the art. Additionally, various combinations of various features described herein can be combined into a system.